Suisun Marsh Monitoring Program
Channel Water Salinity Report
Reporting Period: March - May 2002

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RESULTS

Channel Water Salinity Compliance

State Water Resources Control Board channel water salinity standards for the Suisun Marsh were met at all five compliance stations during March through May 2002 (Table 1). Compliance with channel water salinity standards was determined for each compliance station by comparing March through May mean high-tide specific conductance (SC) with their respective standards. The standard for all compliance stations (i.e. C-2, S-64, S-49, S-42, S-21) during March 2002 was 8.0 millisiemens per centimeter (mS/cm), and April and May 2002 was 11.0 millisiemens per centimeter (mS/cm). Table 1 lists monthly mean high-tide SC at the compliance stations.

The progressive monthly mean SC for each station is used to track salinity conditions during each month (Figures 1 through 6). The progressive mean is calculated for each compliance station by averaging mean high-tide SC for a given day and all previous days of that month. New progressive mean calculations begin at the start of each calendar month.

Delta Outflow

During March through May, 2002, there were four NDOI peaks (Figure 10). In March, the first peak was a result of precipitation, whereas the second peak was due to export reduction at SWP. The peak in April was primarily due to both SWP and CVP exports reduction in support of VAMP, and the May peak was a result of precipitation. The monthly mean Net Delta Outflow Index (NDOI) for March through May is listed below:

Month	Mean NDOI (cubic feet per second)
March	16,908
April	12,092
May	13,547

The NDOI is the estimated average daily rate of outflow from the Delta.

Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during March through May 2002 is listed below:

Month	Total Rainfall (inches)
March	1.95
April	0.10
May	1.33

Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard installations at the SMSCG during March through May 2002 are summarized below.

Date	Flashboard Installation	Gate Status
March – May 5	Full*	Held Open
May 6 – May 31	Out	Held Open

*Full flashboards were installed this year since modified flashboards testing was suspended for 1 year.

SMSCG operation ceased completely with the removal of flashboards on May 6, 2002 due to anticipation of no water quality concerns for the remaining month.

DISCUSSION

Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;

- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

State Water Resources Control Board Order WR 98-6, issued September 25, 1998, authorizes DWR to experimentally test the effects of "modified" flashboards at the SMSCG on salmon behavior. The modifications include gaps between adjacent flashboards. The modified flashboards tend to allow channel water salinity levels in the Marsh to rise somewhat higher than when the standard, full flashboard configuration is used. Experimentation with the modified flashboards began in October 1998 and may continue periodically with boat lock modification through Fall 2003.

Observations and Trends

Conditions during the Reporting Period

From March through May 2002, low channel water salinity trends in the Marsh continued.

March: western stations salinity varied between 5 mS/cm and 7 mS/cm, and eastern stations salinity were below 5 mS/cm. The drop in salinity occurring only at S-64 on March 8 was due to a localize precipitation cell passing by the area.

April: salinity conditions at both eastern and western stations remained stable and below 5.0 mS/cm.

May: salinity at both eastern and western stations inches upward, however, still far below standards.

Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide Specific Conductance at the compliance stations and at monitoring stations S-35 and S-97 for March through May 2002 were compared with means for those months during the previous nine years (Figures 7 through 9).

March: Means at all compliance and monitoring stations were higher in March of 2002 compared to the previous nine years.

April: S-42, S-49, and S-21 were higher than the previous nine years, whereas S-35 was similar to 2002, and S-64 and C-2 were similar to 1997.

May: S-64, S-49, S-35, and S-42 were higher than 2001 whereas C-2 and S-21 were lower than 2001.

SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

The California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. This requirement is based on SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions. Channel water salinity conditions in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance".

The locations of all listed stations are shown in Figure 11.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Status
C-2	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station
60	Mallard Island	South of the Eastern Portion of the Suisun marsh	Reporting Station for Conditions in the Vicinity of Chipps and Van Sickle Islands

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Status
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates is included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

Table 1

Monthly Mean High Tide Specific Conductance at Suisun Marsh Water Quality Compliance Stations

March 2002

Station	Specific Conductance (mS/cm)*
Collinsville, C-2	0.4
National Steel, S-64	2.4
Beldon's Landing, S-49	5.1
Volanti, S-42	5.0
Sunrise Club, S-21	5.0

April 2002

Station	Specific Conductance (mS/cm)*
Collinsville, C-2	0.6
National Steel, S-64	2.3
Beldon's Landing, S-49	4.5
Volanti, S-42	4.7
Sunrise Club, S-21	4.6

May 2002

Station	Specific Conductance (mS/cm)*
Collinsville, C-2	1.0
National Steel, S-64	3.5
Beldon's Landing, S-49	5.4
Volanti, S-42	5.6
Sunrise Club, S-21	5.7

***** = milliSiemens per centimeter

Note: SWRCB standards for March 2002 are 8.0 mS/cm, and April and May 2002 are 11.0 mS/cm, for compliance stations C-2, S-64, S-49, S-42, and S-21.

PROGRESSIVE MEAN OF THE SPECIFIC CONDUCTANCE AT HIGH TIDE

MARCH 2002

PROGRESSIVE MEAN OF THE SPECIFIC CONDUCTANCE AT HIGH TIDE

APRIL 2002

PROGRESSIVE MEAN OF THE SPECIFIC CONDUCTANCE AT HIGH TIDE

MAY 2002

COMPARISON OF MONTHLY MEAN SPECIFIC CONDUCTANCE AT HIGH TIDE

MARCH 1993-2002

COMPARISON OF MONTHLY MEAN SPECIFIC CONDUCTANCE AT HIGH TIDE

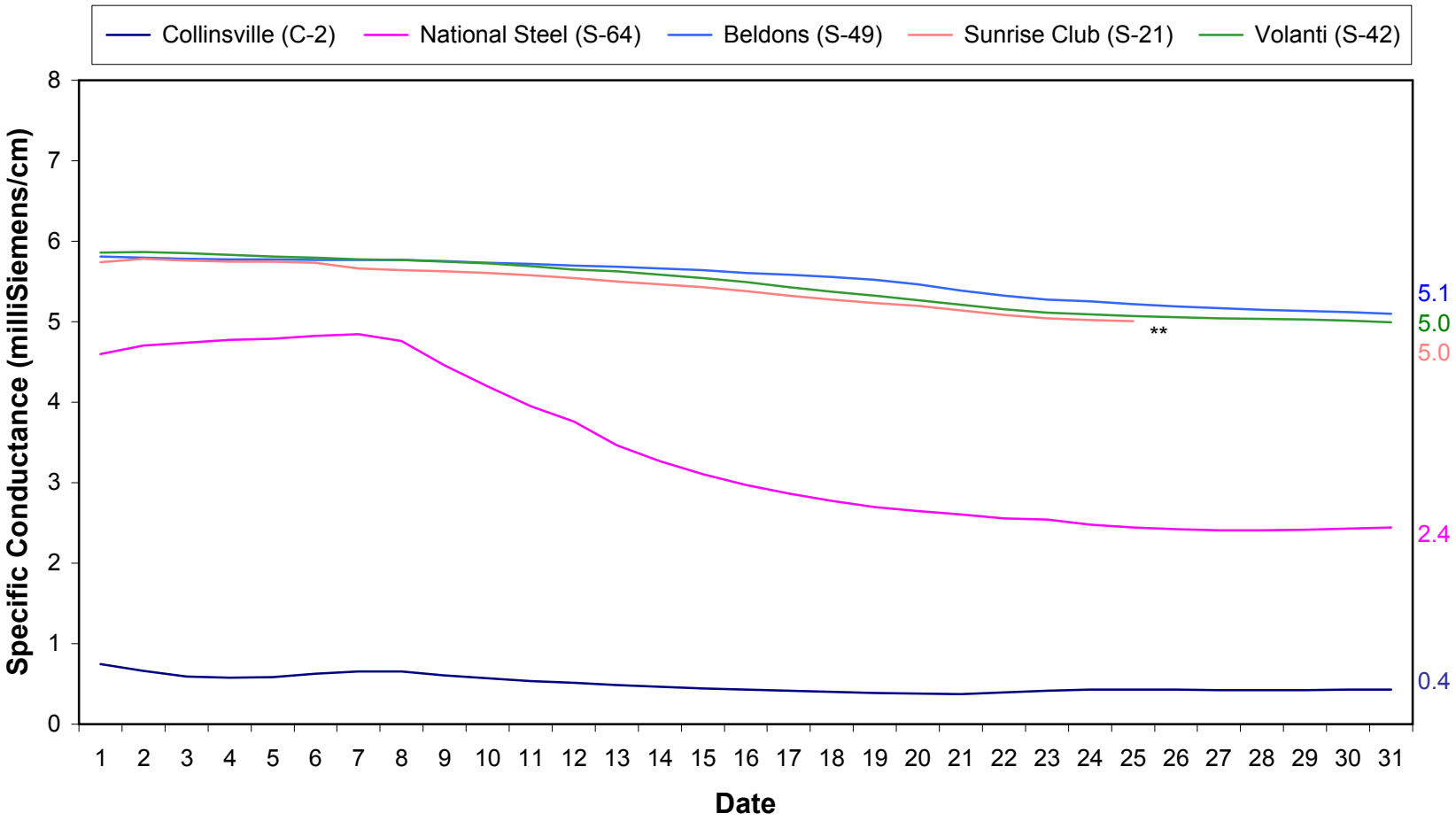
APRIL 1993-2002

COMPARISON OF MONTHLY MEAN SPECIFIC CONDUCTANCE AT HIGH TIDE

MAY 1993-2002

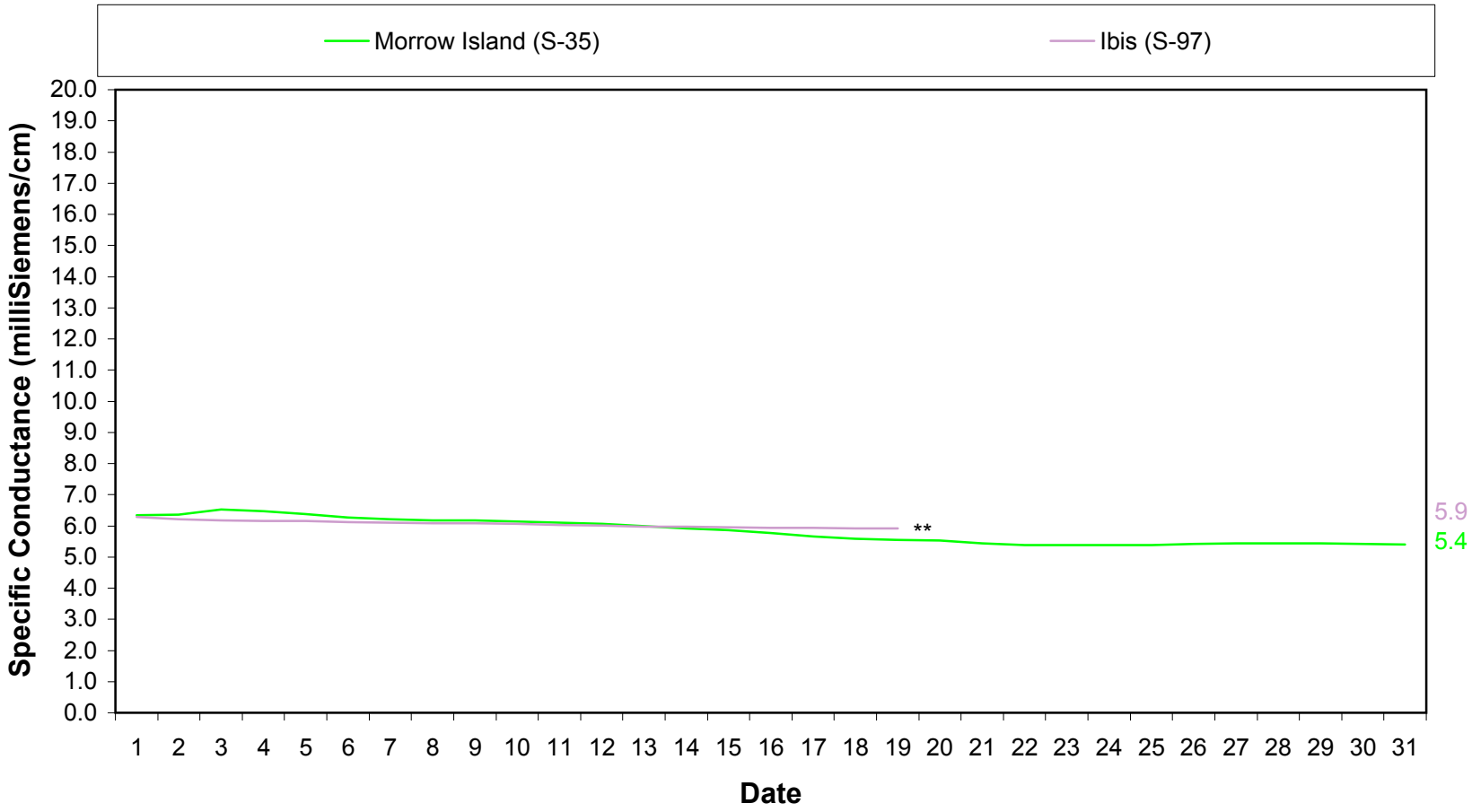
Figure 1. Suisun Marsh Calendar Month Progressive Mean of the Specific Conductance at High Tide March 2002

Standard = 8 mS/cm



* * = missing data due to equipment failure or did not pass QA/QC

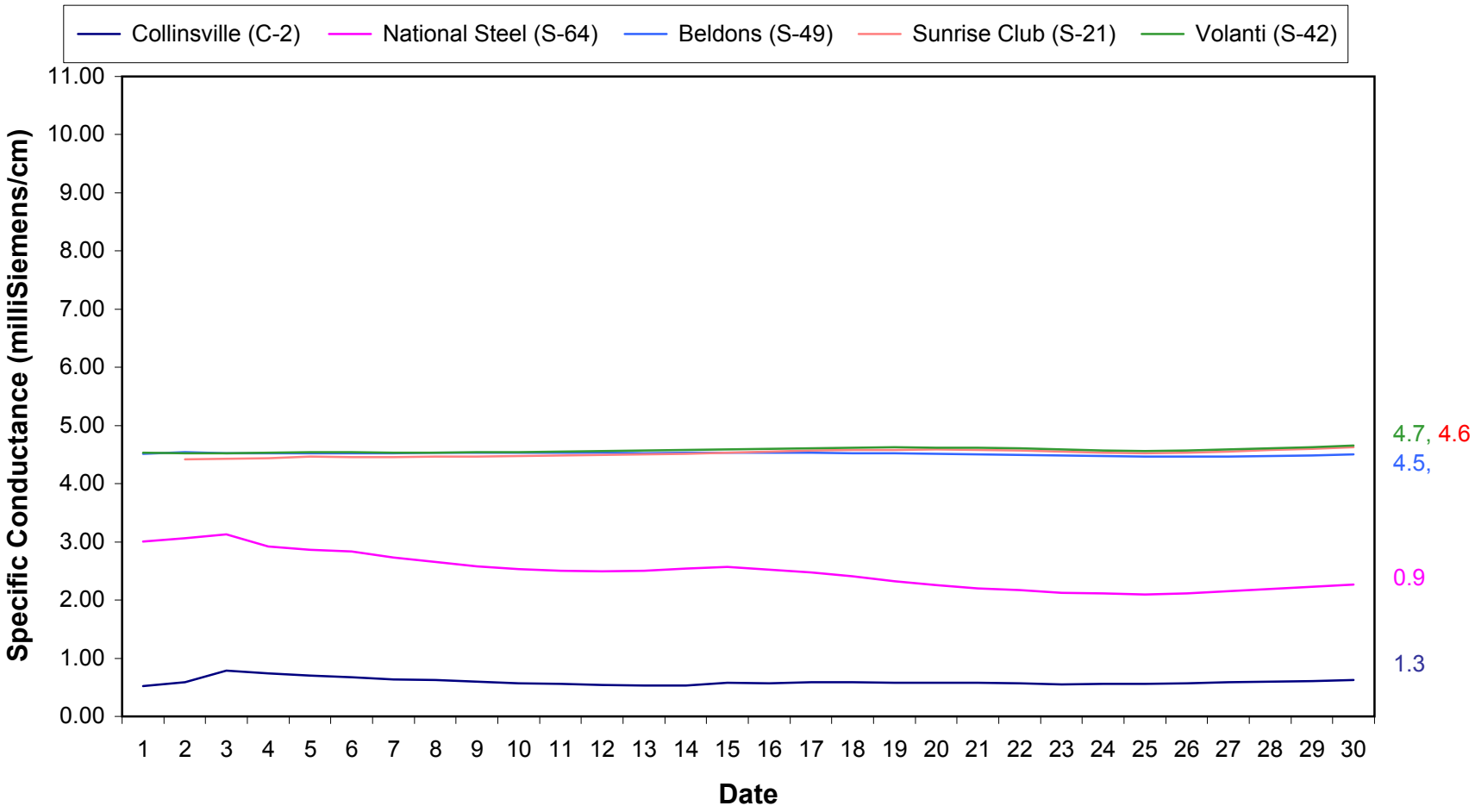
Figure 2. Suisun Marsh Daily Mean High Tide Specific Conductance at Monitoring Stations S-35 and S-97 March 2002



* * = missing data due to equipment failure or did not pass QA/QC

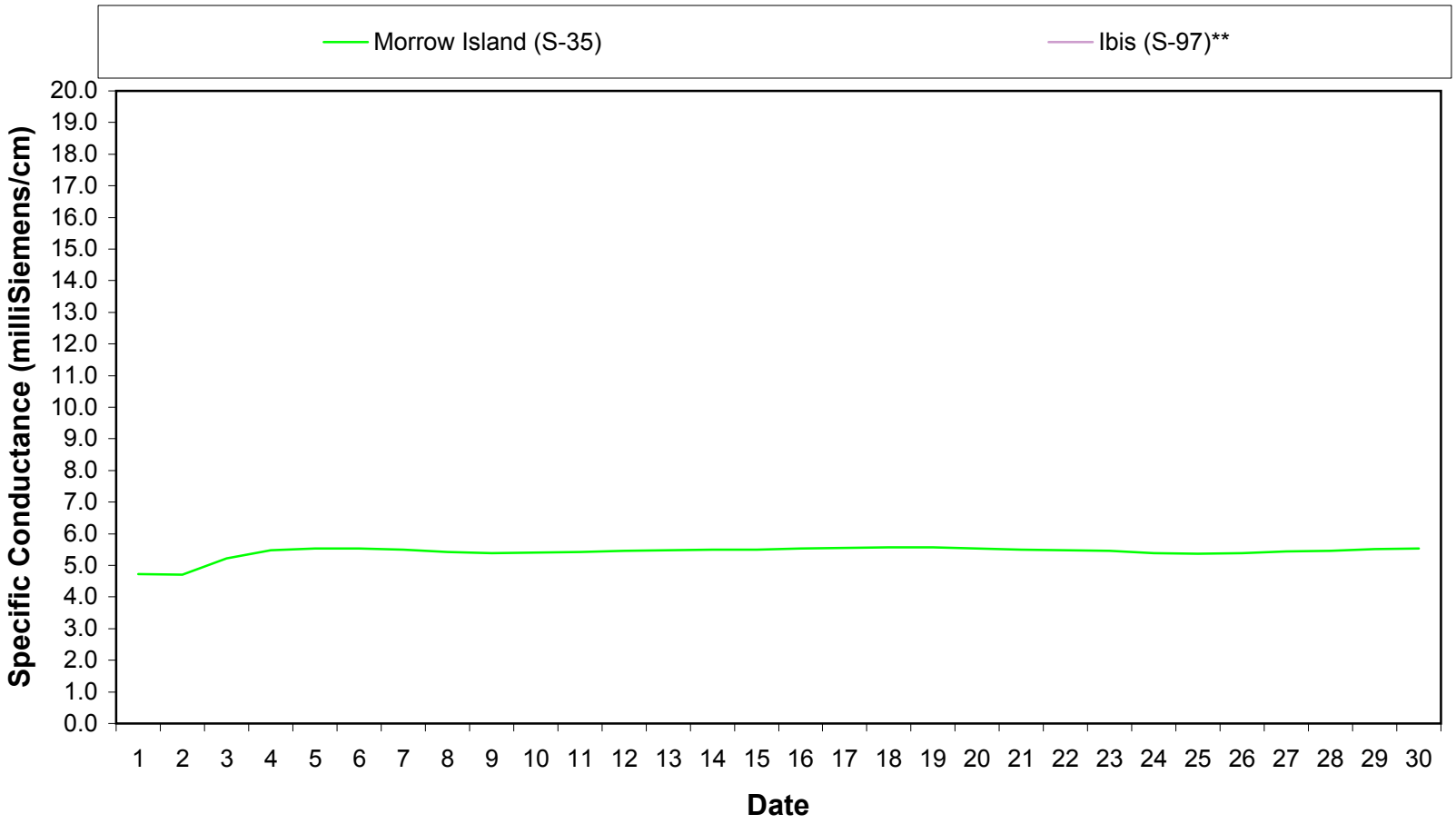
Figure 3. Suisun Marsh Calendar Month Progressive Mean of the Specific Conductance at High Tide April 2002

Standard = 11.0 mS/cm



** missing data due to equipment failure or did not pass QA/QC

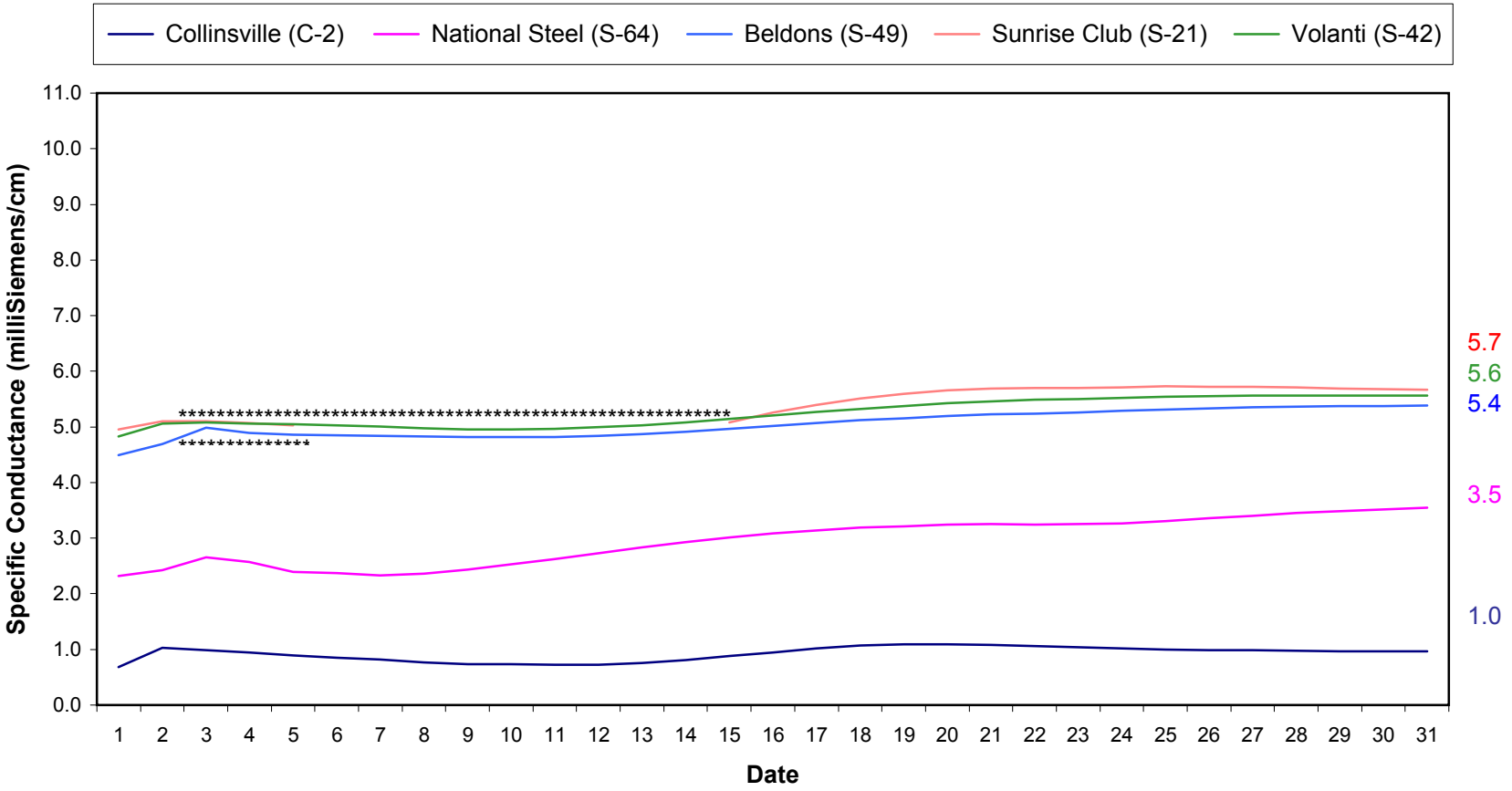
Figure 4. Suisun Marsh Daily Mean High Tide Specific Conductance at Monitoring Stations S-35 and S-97 April 2002



* * Missing data for entire month due to equipment failure.

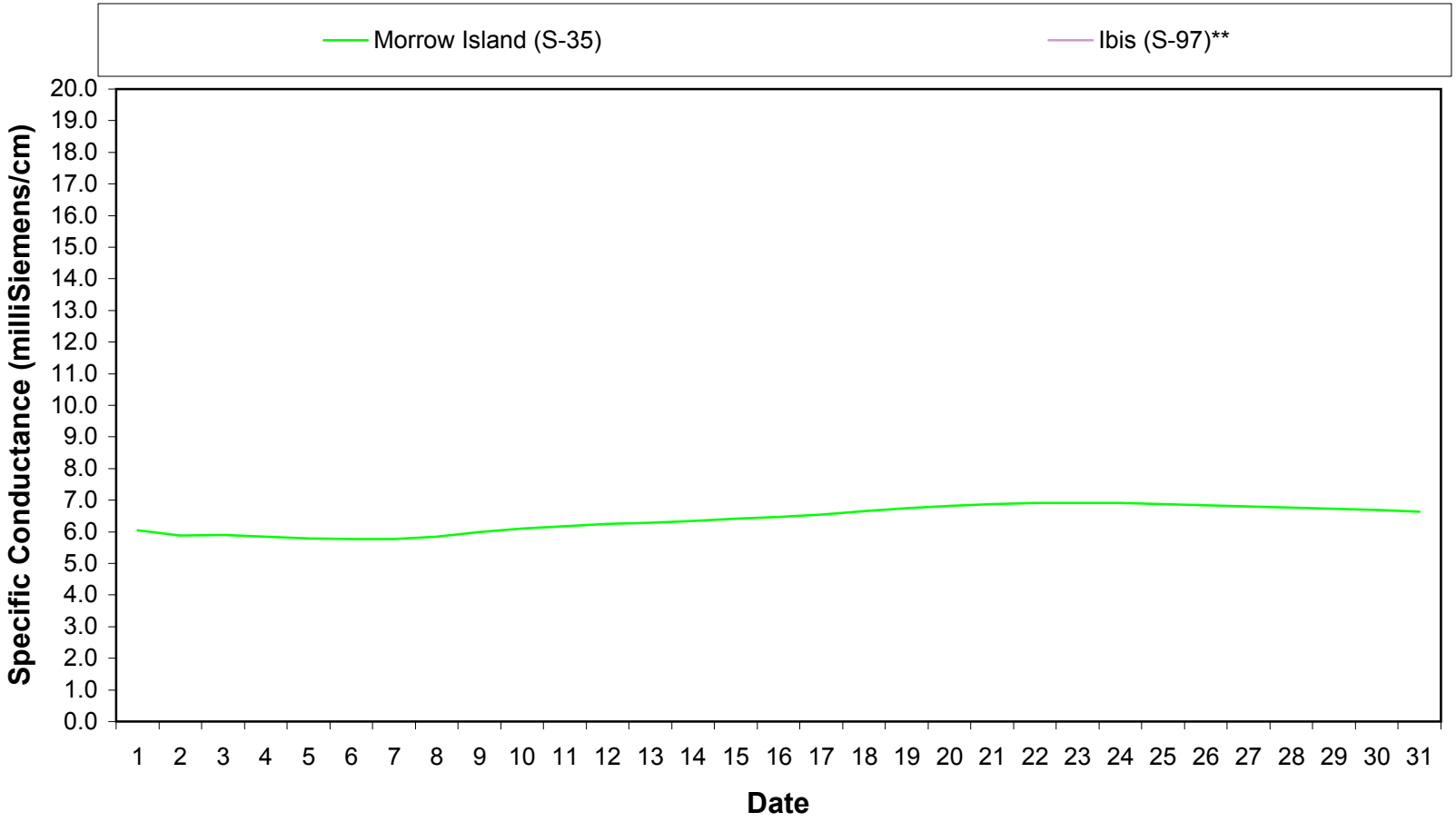
Figure 5. Suisun Marsh Calendar Month Progressive Mean of the Specific Conductance at High Tide May 2002

Standard = 11.0 mS/cm



**missing data due to equipment failure or did not pass QA/QC

Figure 6. Suisun Marsh Daily Mean High Tide Specific Conductance at Monitoring Stations S-35 and S-97 May 2002



* * Missing data for entire month due to equipment failure.

Figure 7. Monthly Mean Specific Conductance at High Tide: Comparison of Monthly Values for Selected Stations March of 1993-2002

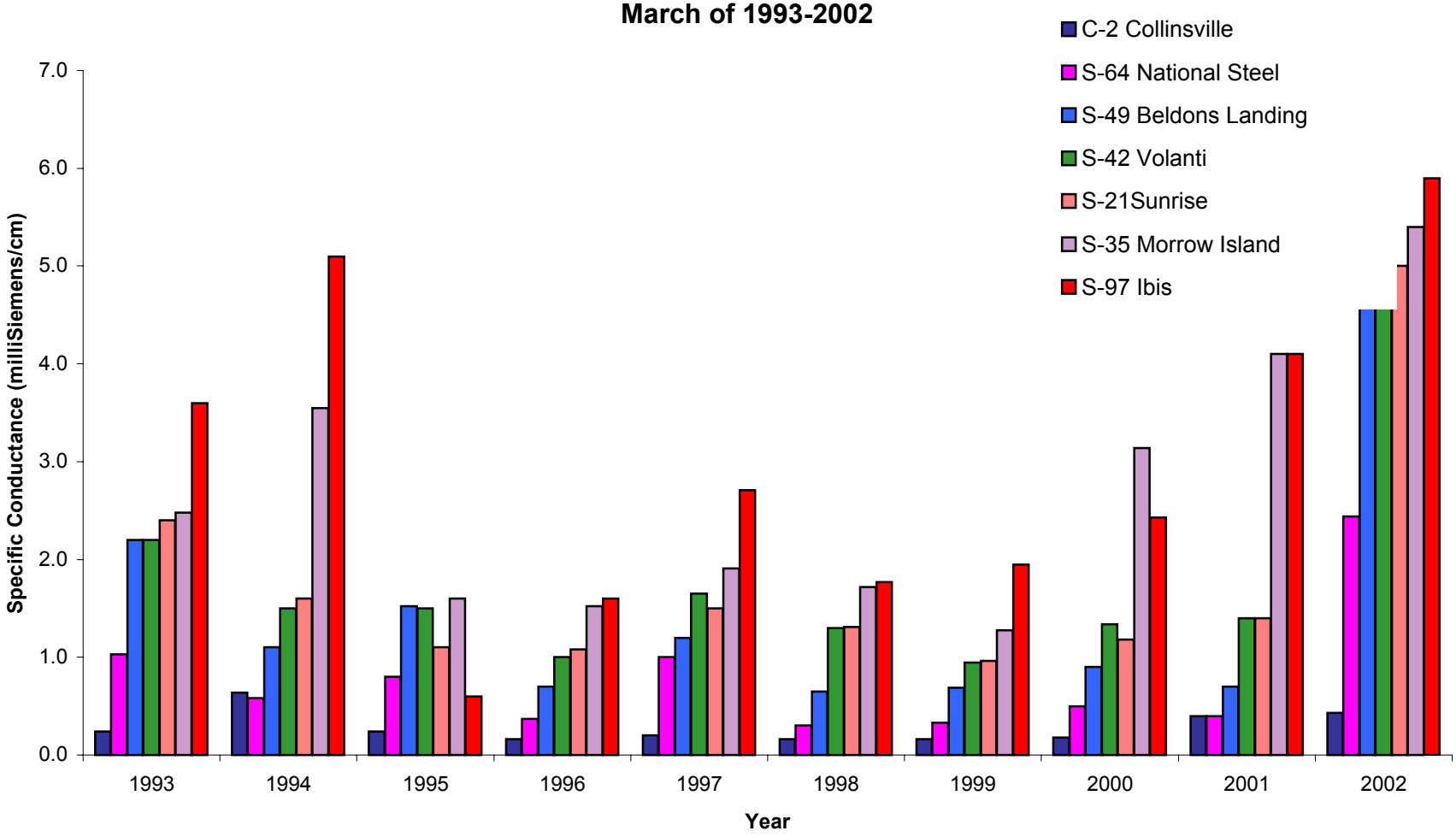


Figure 8. Monthly Mean Specific Conductance at High Tide: Comparison of Monthly Values for Selected Stations April of 1993-2002

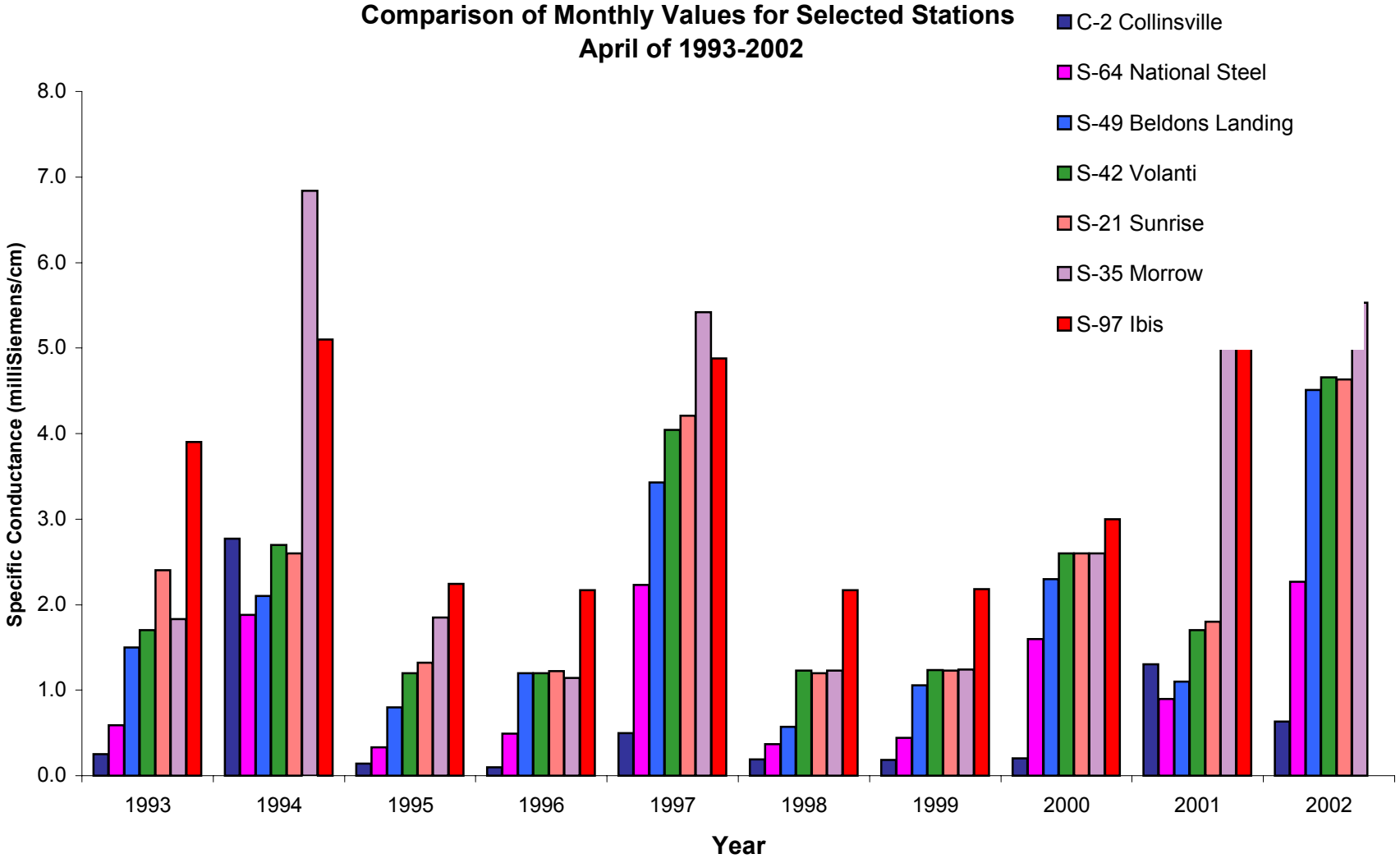


Figure 9. Monthly Mean Specific Conductance at High Tide: Comparison of Monthly Values for Selected Stations May of 1993-2002

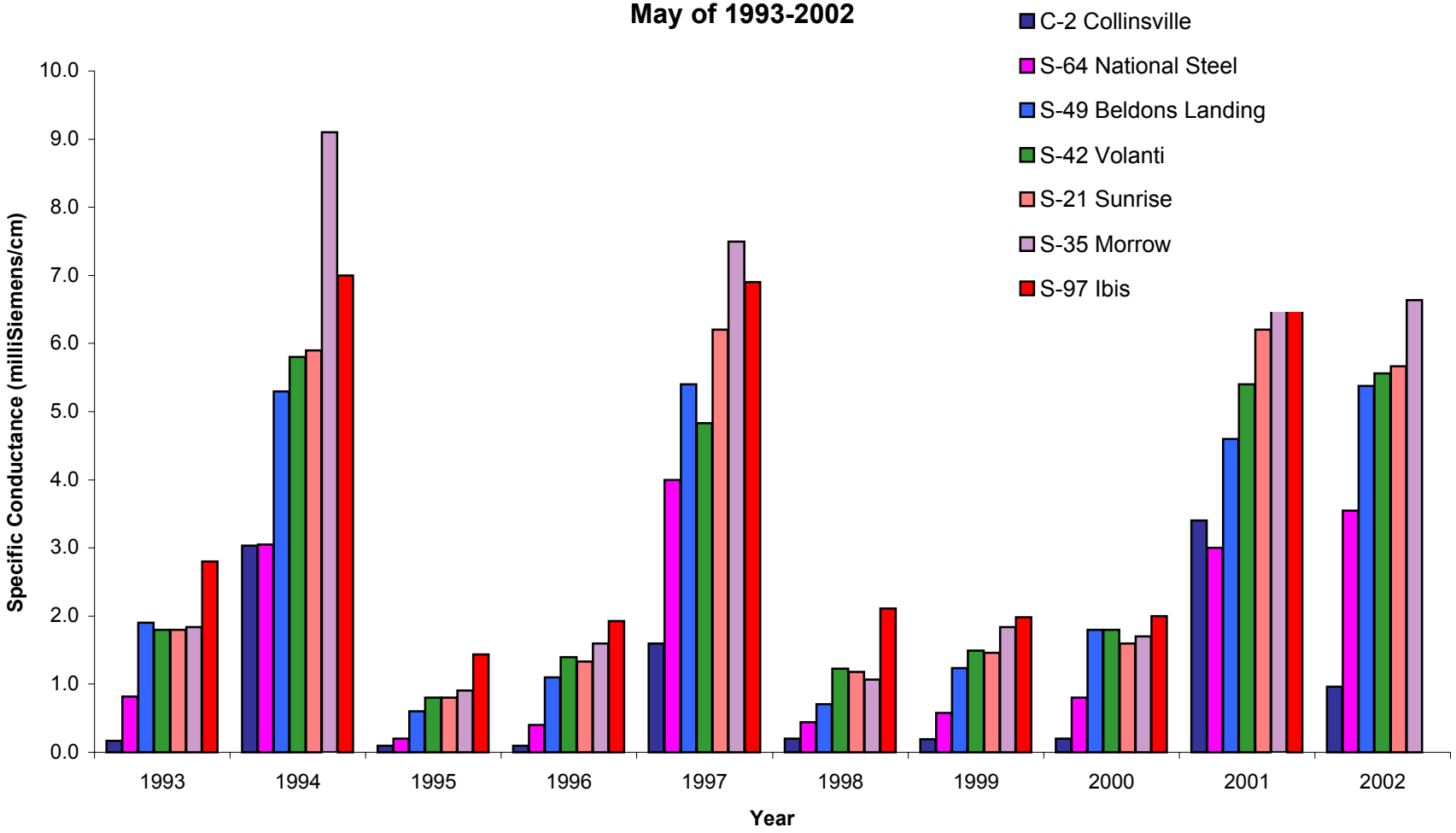


Figure 10. Daily Net Delta Outflow Index For March - May 2002

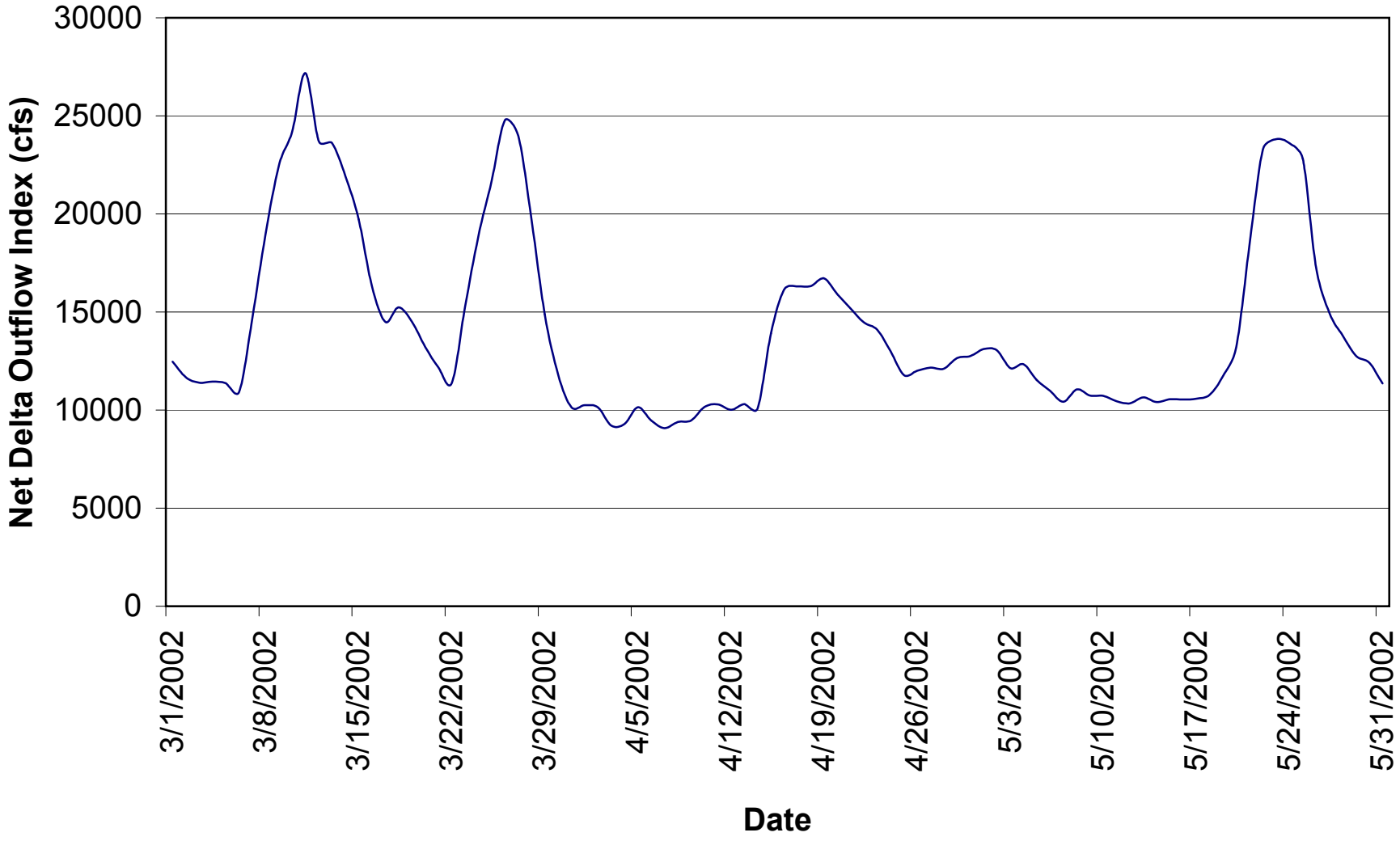
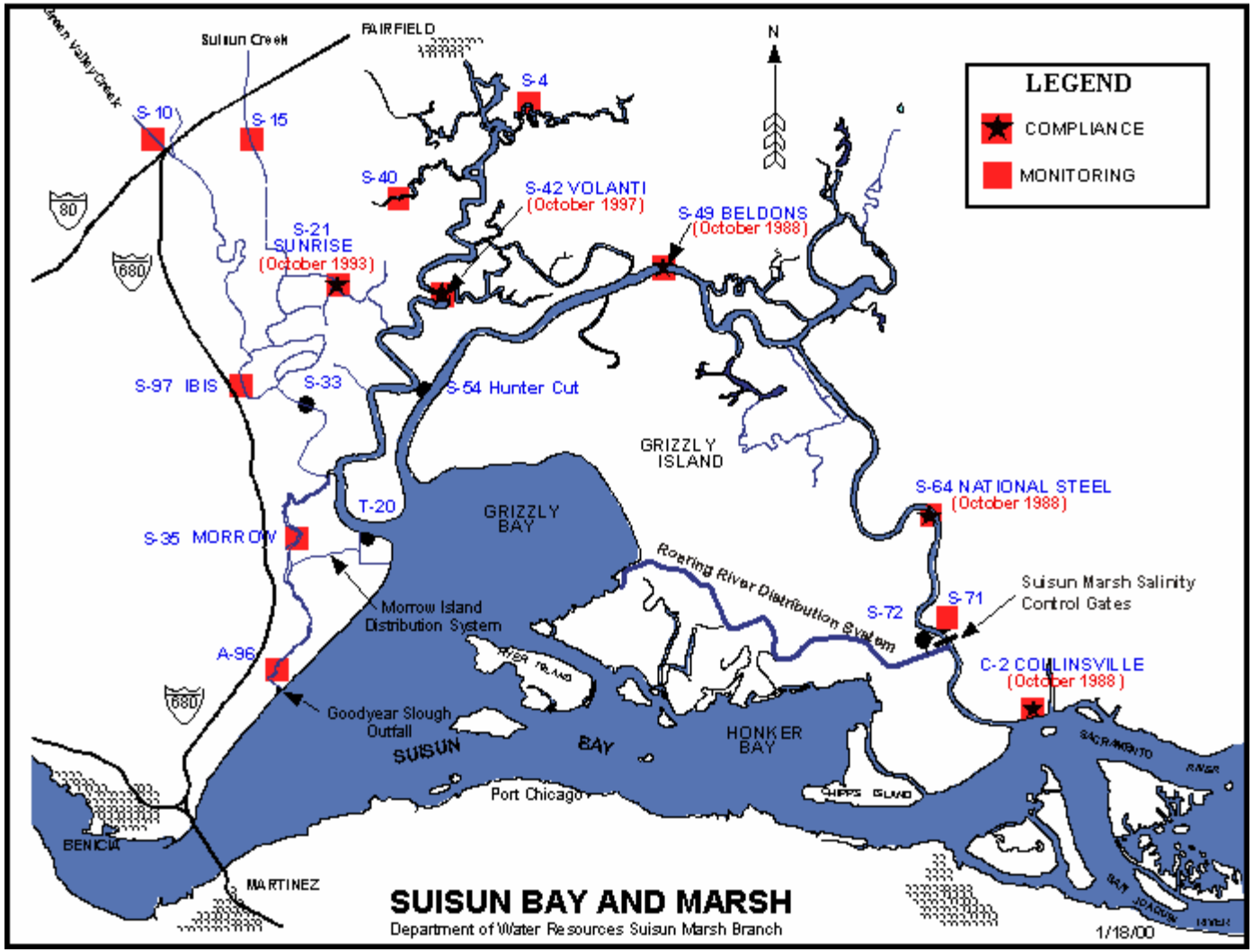


Figure 11


LEGEND
COMPLIANCE
MONITORING
N
FAIRFIELD
Suisun Creek
S-10
S-15
S-4
S-40
S-42 VOLANTI
(October 1997)
S-49 BELDONS
(October 1988)
S-21
SUNRISE
(October 1993)
S-97 IBIS
S-33
S-54 Hunter Cut
GRIZZLY
ISLAND
S-64 NATIONAL STEEL
(October 1988)
T-20
GRIZZLY
BAY
S-35 MORROW
Roaring River Distribution System
Suisun Marsh Salinity
Control Gates
S-72
S-71
Morrow Island
Distribution System
A-96
C-2 COLLINSVILLE
(October 1988)
Goodyear Slough
Outfall
SUISUN
BAY
HONKER
BAY
Port Chicago
BENICIA
MARTINEZ
SUISUN BAY AND MARSH
Department of Water Resources Suisun Marsh Branch
1/18/00